

# NET MIGRATION AND ECONOMIC GROWTH NEXUS: EMPIRICAL EVIDENCE FROM NIGERIA

---

**<sup>1</sup>Bashir Umar Faruk, Ph.D.**

<sup>1</sup>Department of Economics, Federal  
University Gusau, Zamfara, Nigeria.  
Email: [bashkft@gmail.com](mailto:bashkft@gmail.com) 08036847691,

**<sup>2</sup>Abubakar Abdullahi**

<sup>2</sup>M.Sc Student, Department of Economics,  
Umaru Musa Yar'adua University, Katsina.  
Email: [abubakarabdullahi7159@gmail.com](mailto:abubakarabdullahi7159@gmail.com), 08036967159

## **Abstract**

*Migration plays an important role in determining the economic status of most developing countries in the World and Nigeria is not an exception. Record has shown that Nigeria experiences high emigration rate relative to its immigration, and this alone has posed a serious threat to the growth and development of the economy. This study examines net migration and economic growth nexus: empirical evidence from Nigeria, using time series secondary data spanning the period of 1970 to 2017, applying the Autoregressive Distributed Lag (ARDL) Bounds testing approach. The results of the cointegration test shows that, there is a long run cointegrating relationship between net migration and economic growth alongside other control variables. Specifically, the findings of the study revealed a negative significant long run relationship between net migration and economic growth. Therefore, the study recommends that the push factors such as poor wage and incentive structure in Nigeria need to be addressed. Moreover, the pull factors, such as good quality of life abroad need to be provided in Nigeria, in order to discourage people from leaving the country. The latter can be achieved through massive infrastructural development, transparent recruitment process and incentive based remuneration system that rewards achievement and hard work.*

**Keywords:** Net Migration, Economic Growth, ARDL.

**JEL Classification:** F22, O47, C5

## **INTRODUCTION**

Nigeria plays an important role in African migration to other parts of the world. As the most populous African country, Nigeria has become increasingly involved in international migration to Europe, Gulf countries and South Africa. The economic reasons for migration in most cases are related to wage differentials, differences in GDP per capita, large economic disparities among regions and also unemployment differentials (Afaha, 2018). Moreover, there is continuing debate about the impact of international migration on the sending and receiving countries as well as on the migrants themselves. However, the question is what will happen if

both highly skilled and unskilled workers from developing countries move in large numbers to advanced countries to seek for opportunities. In addition, Migration is a global phenomenon which is not peculiar to a single country or a particular region. However, the impact of migration is worrisome to the extent that its effects go beyond the country of origin, but also the destination and the migrants. Even though it may be difficult to have a clear statistical figure on the skill level of emigrants, there are indications that the possibility to migrate is high among skilled labour particularly in Nigeria. However, it is on record that the number of emigrants from Nigeria is growing significantly against that of immigrants (Abiola, 2019), which poses a great threat towards attaining economic growth in Nigeria. Data from the World Development Indicators (2014) revealed that net-migration for Nigeria was -95,769 in 1992; it however rose to -170,000 in 2002 and in 2012 it stands at -300,000. This indicates that net-migration for the country has remained negative and rapidly rising especially since the early 1990s to 2012. Furthermore, the net migration for Nigeria in 2016 was -327 per thousand population, while it stands at -3.19 per thousand population in 2017, showing a decline, when compared to 2016 (WDI, 2017).

Drinkwater, Lotti and Pearlman (2003) asserted that migration may drain away valuable talents, since educated and motivated people are in most cases likely to migrate in search of greener opportunities. They explained further that in 2000, about 10.7% of highly skilled work force (trained in Nigeria) migrated abroad especially to Organisation for Economic Cooperation and Development (OECD) countries. Further, Fadahunsi and Rosa (2002) noted that 64% of Nigerian emigrants (on the average) have attained tertiary level of education. All these assertions provide strong evidence that many trained professionals, athletes and other skilled work force, who could have contributed to the development of Nigeria if they were engaged, have abandoned the nation and used their skills and intellect to aid the development of other countries.

Against this background, this study intends to empirically examine the nexus between net migration and economic growth in Nigeria. The study is also aimed at investigating the direction of causality between net migration and economic growth in Nigeria. After the introduction, the paper is structured as follows: section two provides theoretical literature review; section three is empirical literature, while section four describes the data and explains the methodology. Section five presents and explains the results. Finally, section six concludes and provides policy recommendations.

## **THEORETICAL LITERATURE**

### **Neoclassical Theory of Migration**

The neoclassical theory of migration is among the most influential theories of migration. The theory posits that wages differentials and employment conditions between countries as well as migration costs are factors causing migration. According to this theory intending migrants estimate the benefits and costs of migrating before making such decisions; hence migration occurs if their expected return (ER) is positive (Arango, 2000). “This theory of migration is based on familiar tenets like rational choice, utility maximisation, expected net returns, factor mobility, wage differentials and the fact that migration results from the uneven geographical distribution of labour and capital.” (Arango, 2002).

According to this theory, workers usually move from countries with abundance of labour and low wages to others that are labour-scarce with higher wages. Hence the principal motivation for migration is the increased welfare that individuals receive from higher labour income or wages. However, the neoclassical theory of migration is argued to suppress the role of non-economic factors which to a large extent play a deterministic role in an individual migrant’s decision to leave his home country (Arango, 2002). The theory has failed to explain why few people move in view of existing and very large income gaps across countries. One would expect that massive movement of labour would be migrating across countries (that have scarce labour) with new information or the perception of higher returns on labour, but the reality is that existing barriers such as obtaining travel permits, visas and other documents which intending migrants must have, limit the degree of such exchange of labour across countries (labour immobility).

### **Dual Labour Market Migration Theory**

The dual labour market theory is another important theory applicable to migration. The theory links immigration to the structural requirements of modern industrial societies. The theory states that international migration is largely demand-based and is initiated by recruitment on the part of employers in developed societies or by government acting on their behalf; migration is driven by an increasing demand for “cheap” labour. The dual labour market theory pays more attention to the receiving end of migration in the destination countries or regions (Arango, 2000). Motivated to ‘make it’ in a foreign land, an immigrant accepts relatively low pay and is willing to endure just a little more hardship than natives, to the advantage of profit-motivated employers who gain from cheaper labour. The theory presumes that more developed economies require foreign workers to take up jobs, which local workers have refused (Arango, 2004, cited in Lucas, 2006).

The theory, according to Arango (2002) does not principally provide general explanations of the factors affecting migration, but points that international migration occurs as a structural

demand for foreign workers present in the economic structure of more developed economies. The theory explains only a part of reality, since it suggests that international migration is driven by demand and does not take into account the push factors from sending countries; so it is a one-sided theory. Migration in present times does not result primarily from recruitment practices, as migrants largely come based on their own planning and decision making, not necessarily to take up existing jobs or openings in the labour market of the destination country.

In summary, the neoclassical theory emphasized the role of economic factors as a major cause of migration. The dual labour market theory states that the pull factors in receiving countries, such as the chronic need for foreign workers that more advanced destination countries have are more significant in explaining the causes of international migration. It accords less significance to the push factors in source countries. However, all the above mentioned theories do not deny the fact that migrants play an important role to economic growth and development of many countries in the world. International migration contributes to growth through the provision of labour services, which is an essential factor in the production process, that may result into increase income, and consequently rise in the Gross Domestic Product (GDP) of not only the host country but even the migrant's own country, through remittances and job opportunities they can create.

### **EMPIRICAL LITERATURE REVIEW**

Sanderson and Kentor (2009) examined the relationship between globalization, development and international migration from 1970 to 2000 in less developed countries, using cross national empirical analysis. The finding showed a significant non-linear relationship between net emigration and economic development. Ramirez and Gonzalez (2018) investigated the contribution of migration to economic growth in Spain from 2009 to 2015 using input output analysis. The result indicated a positive relationship between migration and economic growth during the reviewed period.

Kotani (2012) undertook an empirical research to understand the effect of net-migration on economic growth relations in Indonesia. The study employed Ordinary Least Square (OLS) regression techniques, using annual time series data from 1993 to 2005 for GDP, population growth, fertility rate and net migration. The study revealed that lagged fertility rate does not affect the economic growth in the two-variable regression. However, there exists a significant negative relationship between population growth and economic growth upon the inclusion of net-migration as a variable in the model. The study therefore concluded that net-migration is a key determinant of economic growth.

Akanbi (2017) examined the impact of migration on economic growth and human development in sub-Saharan African countries from 1999 to 2013. The study used two stage least square estimation technique for the analysis. The result showed significant negative relationship

between migration and economic growth. Obomeghie, Abubakar and Abdurrahman (2018) investigated the impact of net migration on total fertility rate in sub-Saharan African countries, with empirical evidence from Nigeria for the period of 2000 to 2016, using descriptive statistics method. It was found that net migration impact positively in Nigeria.

Afaha (2013) investigated the relationship between migration, remittances and development in Nigeria from 1977 to 2008. Household survey-based method was used for the study. The result showed that migrants' remittances in Nigeria have significant positive relationship with economic growth. Darkwah and Verter (2014) examined the determinants of international migration in Nigeria spanning the period from 1991 to 2011. Ordinary least square estimation method was used. The result indicated that the level of unemployment, migrants' remittances and population growth are the key determinants of emigration from Nigeria to other countries. The findings also showed a strong positive relationship between the number of Nigerian's abroad and unemployment rate, migrants' remittances and population growth in Nigeria. Olarinde (2015) conducted a research on the effect of migration on Nigeria's human capital and economic growth from 1980 to 2011. Ordinary least square technique (OLS) was employed. The outcome of the study revealed a significant positive long run relationship between migration, human capital development and economic growth during the study period.

Moreover, Abiola (2019) investigated the impact of labour migration, remittances and economic growth in Nigeria from 1980 to 2016. The study used indirect least square approach for the analysis. The findings indicated a positive relationship between emigration and economic growth in Nigeria. In another study, Umar and Abdullahi (2019) empirically examined the impact of net population growth and economic growth in Nigeria using time series data from 1970 to 2017, through the application of ARDL model approach. The study realized a negative and significant long run cointegrating relationship between economic growth and net population growth within the sample period. Also, a unidirectional causality exists running from net population growth to economic growth. The study however failed to address the issue of net migration (difference between emigrant and immigrants) and its relationship to economic growth. From the reviewed studies, there are certain observed weaknesses in the use of methodology and application of control variables to examine the effect and the relationship between net-migration and economic growth. Studies conducted by Kotani (2012), Darkwah and Verter (2014), and Olarinde (2015) applied Ordinary Least Square Method, which may not be suitable for series that are not integrated in the same order, that is a combination of  $I(1)$  and  $I(0)$ . Hence the obtained results may not be reliable in such cases. To fill this gap, the present study employed Autoregressive Distributive Lag to examine the relationship between net migration and economic growth in Nigeria. In addition, none of the related studies have considered the relationship between net migration and economic growth in-

depth with particular reference to Nigeria. This study further incorporates other control variables such as human capital (proxy by educational expenditure), investment (proxy by gross fixed capital), and Foreign Direct Investment, as included in the previous studies.

## **METHODOLOGY**

### ***Variable Description and Data Source***

This study utilizes annual time series data spanning from 1970 to 2017. The growth rate of real Gross Domestic Product (GDP) is used as a proxy for economic growth. Net migration is the difference in the rate of emigration and immigration in Nigeria. The control variables include educational expenditure (proxy by total government expenditure in primary, secondary and tertiary levels in Nigeria), investment (proxy by gross fixed capital) and foreign direct investment measured by FDI stock. Moreover, education expenditure as the control variable plays a role in boosting economic growth based on human capital theory. Also investment serves as an important ingredient in the production processes; hence its contribution towards achieving economic growth can never be overemphasized. Finally, foreign direct investment also plays a significant role in promoting economic growth as re-echoed by Yaseen (2014), who holds that FDI helps in attaining economic growth through the transfer of external resources, which in turn increases the level of productive investment and supports the entire economy. The data on GDP, net migration, educational expenditure, and foreign direct investment were sourced from the World Development Indicators (WDI, 2017) while data on gross fixed capital were collected from the United Nations Conference on Trade and Development (UNCTAD, 2017).

### ***Estimation Technique***

The study adopts the bounds testing approach to co-integration based on Autoregressive Distributed Lag (ARDL) model framework, as proposed by Pesaran, Shin, and Smith (2001), in order to examine the relationship between net migration and economic growth in Nigeria. An important feature of the ARDL approach compared to other co-integration approaches such as Engel and Granger (1987) and Johansen and Juselius (1990) is that the ARDL does not impose restriction on the integration order of the variables being all  $I(1)$ . Consequently, the ARDL can be applied if one or some of the variables are  $I(0)$  and others are  $I(1)$  ( Abubakar & Kassim, 2016). The ARDL model involves gross domestic product, net migration alongside other control variables and is presented in equation (1) as:

$$\begin{aligned} \Delta L(GDP)_t &= \alpha_0 + \alpha_1 LGDP_{t-1} + \alpha_2 (NMGR)_{t-1} + \alpha_3 L(ED)_{t-1} + \alpha_4 L(INV)_{t-1} \\ &+ \alpha_5 L(FDI)_{t-1} + \sum_{i=1}^p \beta_1 \Delta L(GDP)_{t-i} + \sum_{i=0}^p \beta_2 \Delta (NMGR)_{t-i} + \sum_{i=0}^p \beta_3 \Delta L(ED)_{t-i} + \sum_{i=0}^p \beta_4 \Delta L(INV)_{t-i} \\ &+ \sum_{i=0}^p \beta_5 \Delta L(FDI)_{t-i} + \mu_t \dots \dots \dots (1) \end{aligned}$$

Gross domestic product (GDP) is the dependent variable and net migration (NMGR) is the core variable in the model. While education expenditure (ED), investment (INV) and foreign direct investment (FDI) stands as control variables, L is the natural logarithms, P is the optimal lag length and  $\mu_t$  is the error term. However, all the variables are logged except NMGR. Moreover, F- Test was conducted in order to detect if the variables are co-integrated, that is have long run relationship. The null hypothesis is  $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ , which is tested against the alternative hypothesis  $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$ . The decision rule is that if the computed F-statistic is greater than the upper bound critical value, then the  $H_0$  is rejected (the variables are co-integrated). On the contrary, if the F-statistic is below the lower bound critical value, then the  $H_0$  cannot be rejected (there is no co-integration among the variables). But if the computed statistic falls within (between the lower and upper bound) the critical value band, the result of the inference is inconclusive (Umar, 2018). In order to get the short-run coefficients of the variables, an error correction model (ECM) is estimated. The ARDL specification of the ECM is represented in equation (2) as:

$$\begin{aligned} \Delta L(GDP)_t &= \alpha_0 + \sum_{i=1}^p \beta_1 \Delta L(GDP)_{t-i} + \sum_{i=0}^p \beta_2 \Delta (NMGR)_{t-i} + \sum_{i=0}^p \beta_3 \Delta L(ED)_{t-i} \\ &+ \sum_{i=0}^p \beta_4 \Delta L(INV)_{t-i} \\ &+ \sum_{i=0}^p \beta_5 \Delta L(FDI)_{t-i} + \delta ECT_{t-1} + \mu_t \dots \dots \dots (2) \end{aligned}$$

**ANALYSIS AND DISCUSSION OF RESULTS**

**Results of Unit Root Test**

To ascertain the unit root (or stationarity) property of the series, Augmented Dicker-Fuller (ADF) and Philips-Perron (PP) statistics were used and the result is presented in table 1:

**Table 1: Results of Unit Root Tests**

Variable	ADF		PP	
	Level	First difference	Level	First difference
LGDP	-0.821	-5.764***	-1.045	-5.850***
NMGR	-4.292***	-----	-3.900**	-----
LED	-1.914	-3.610***	-1.359	-7.353***
LGFC	-2.339	-4.209***	-1.536	-4.205***
LFDI	-2.516	-12.901***	-1.411*	-----

Source: Researcher’ computation using e- views 9.

\*\*\*\*\*and \* indicate statistical significance at 1%, 5%, and 10%, respectively. L denotes logarithm. Lag length are selected based on AIC.

The results of the stationarity tests reported in Table 1 showed that NMGR is stationary at level (I (0)). Whereas, LGDP, LED, LINV and LFDI are stationary only after taking their first difference (I(1)).This shows that the series are a mixture of I(0) and I(1). The mixed order of integration of the variables provides a strong justification for the application of the ARDL method in this study.

**Results of ARDL Co-integration Test**

Upon verifying the stationary properties of the variables, the cointegration test is then conducted using the Bounds testing approach. The results of cointegration test of the model involving GDP, net migration and other control variables are presented in Table 2.

**Table 2: Results of ARDL Bound Tests**

Dependent Variable	Function				F-Statistic			
LGDP	F(NMGR,LED, LGFC,LFDI)				4.107**			
<b>Critical Values Bounds</b>								
10%		5%		2.5%		1%		
I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
2.00	3.09	2.56	3.49	2.88	3.87	3.29	4.37	

Source: Researcher’s computation using Eviews 9.0

\*\* denotes statistical significance at 5%

The result shows that, the calculated F-statistic (4.107) is greater than the upper critical Bounds value at 5%, this implies that there is long run equilibrium co-integrating relationship between GDP, NMGR and other control variables over the sample study periods.

**Results of the Estimated Long Run Coefficients**

In order to estimate the relationship between the variables, the optimal lag-length (2,4,3,1,3) was automatically chosen by the Akaike Information Criterion (AIC). The results of the long-run is reported in Table 3:

**Table 3: Results of Estimated Long Run Coefficients**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistics</b>	<b>Prob.</b>
<b>LNMG</b>	<b>-0.706***</b>	<b>0.163</b>	<b>-4.322</b>	<b>0.000</b>
<b>LED</b>	<b>-0.113</b>	<b>0.089</b>	<b>-1.263</b>	<b>0.220</b>
<b>LINV</b>	<b>0.449***</b>	<b>0.132</b>	<b>3.393</b>	<b>0.003</b>
<b>LFDI</b>	<b>-0.157</b>	<b>0.126</b>	<b>-1.247</b>	<b>0.226</b>
<b>C</b>	<b>26.466***</b>	<b>2.791</b>	<b>9.482</b>	<b>0.000</b>

**R<sup>2</sup> = 0.751**  
**F-Stat= 3.911**

**Source:** Researcher’s computation using Eviews 9.0.  
**Note:** The ARDL model selected based in AIC is 2,4,3,1,3.

The results illustrate that net migration has a negative and significant effect on economic growth at 1% level of significant. Specifically, a 1% increase in net migration leads to a 0.71% reduction in economic growth. This outcome conforms to the finding of Drinkwater et al. (2013) who opined that migration can drain away valuable talents, because educated and motivated people are in most cases likely to migrate in search of better opportunities. This reflect the situation in Nigeria where many trained professionals such as teachers, doctors, engineers and so on, leave the country to look for better jobs abroad. These trained professionals that would have contributed to the development of Nigeria if engaged, abandoned the nation and used their skills and intellects to aid the development of other countries. The study is also in line with the finding of Akanbi (2017), who also found negative relationship between migration and economic growth in Nigeria.

The study therefore aligned with the neoclassical theory of migration which postulates that wages differentials and employment conditions between countries, as well as migration costs

are factors causing migration. The theory argues that intending migrants estimate the benefits and costs of migrating before making such decisions; hence migration occurs if their expected return (ER) is positive. Looking at the Nigerian context, the negative relationship between net migration and economic growth is not unexpected, considering the large turnout of skilled professionals and other unemployed youth who are emigrating out of the country to look for greener pasture in developed countries. Some of THE other reasons for emigration from Nigeria are associated problems of corruption which has eroded human value, the harsh economic climate, the rising unemployment, inadequate provision of basic social amenities and infrastructural decays, especially poor electricity supply and bad roads network which has rendered many gainfully employed youths either unemployed or under-employed. In addition, stringent economic policies that favour only the few elites at the detriment of the teeming masses has caused many Nigerians to abandon the country and look for opportunities outside. Therefore, while these skilled and trained Nigerians contribute to the development of their host countries, they became brain drain to their country of origin. The consequences of this are the underdevelopment and sluggish economic growth.

The coefficient of LED shows insignificant negative relationship with LGDP in the long run. A 1% increase in LED leads to a 0.11% decrease in economic growth in Nigeria during the study period. However, the negative relationship found between LED and LGDP was due to lack of skilled human resources which composes the ultimate basis for the wealth of nations. Therefore, capital and natural resources are considered as passive factors of production, human beings are the active agents who accumulate capital, exploit natural resources and build economic, social and political organization for sustainable economic development. Misplaced priority, poor budgetary allocation to education, and lack of political will to education can be said to have resulted in a negative relationship between economic growth and expenditure on education in Nigeria during the review period. On the other hand, investment (LINV) has a long run positive and significant effect on economic growth in Nigeria, a 1% increase in investment leads to an increase in economic growth in Nigeria by 45%. This result is consistent with the findings of previous studies such as Ugochukwu and Chinyere (2013), Shu'aib and Ndididi (2015), Onyinye et al. (2017) and Ikechi and Anayochukwu (2014).

The F-statistic is 3.911 and is statistically significant at 1 per cent probability level. This indicates that the coefficients included in the model are jointly statistically significant. The computed value of  $R^2$  is 0.751 shows that 75.1% of the total variation in the economic growth is accounted for by the included explanatory variables, while 24.9% of the total variation in economic growth is attributable to influence of other variables, which are not included in the estimated model.

**Results of Estimated Short Run Coefficients**

Having established the long run co-integration relation between the variables of interest, we then proceed to examine the short run behaviour of the variables in case of long run disequilibrium, and then observe the speed of adjustment towards the long run equilibrium using Error Correction Mechanism. The ECM measures the speed of adjustment and it shows how fast the system adjusts to restore equilibrium. The results of the short run model are reported in Table 4. The results indicate a positive and significant short run relationship between NMGR and LGDP. A 1% increase in NMGR leads to 39% increase in LGDP. The short run positive effect of NMGR on LGDP portrays a situation whereby trained and skilled Nigerians who travel abroad contribute to the economic growth, but only in the short run.

**Table 4. Results of the Estimated Short-Run Coefficients**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistics</b>	<b>Prob.</b>
<b>D(LGDP(-1))</b>	<b>0.208</b>	<b>0.124</b>	<b>1.675</b>	<b>0.108</b>
<b>D(NMGR)</b>	<b>0.385***</b>	<b>0.122</b>	<b>3.147</b>	<b>0.005</b>
<b>D(NMGR(-1))</b>	<b>0.054</b>	<b>0.122</b>	<b>0.443</b>	<b>0.662</b>
<b>D(NMGR(-2))</b>	<b>-0.294</b>	<b>0.272</b>	<b>-1.080</b>	<b>0.292</b>
<b>D(NMGR(-3))</b>	<b>-1.766***</b>	<b>0.300</b>	<b>-5.876</b>	<b>0.000</b>
<b>D(LED)</b>	<b>0.062*</b>	<b>0.023</b>	<b>2.689</b>	<b>0.013</b>
<b>D(LED(-1))</b>	<b>0.113***</b>	<b>0.028</b>	<b>3.976</b>	<b>0.001</b>
<b>D(LED(-2))</b>	<b>0.107***</b>	<b>0.027</b>	<b>4.005</b>	<b>0.001</b>
<b>D(LINV)</b>	<b>0.108***</b>	<b>0.035</b>	<b>3.039</b>	<b>0.006</b>
<b>D(LFDI)</b>	<b>-0.028*</b>	<b>0.016</b>	<b>-1.723</b>	<b>0.099</b>
<b>D(LFDI(-1))</b>	<b>0.061***</b>	<b>0.019</b>	<b>3.148</b>	<b>0.005</b>
<b>D(LFDI(-2))</b>	<b>0.043*</b>	<b>0.016</b>	<b>2.640</b>	<b>0.015</b>
<b>ECM(-1)</b>	<b>-0.392***</b>	<b>0.071</b>	<b>-5.499</b>	<b>0.000</b>

Source: Researcher’s computation using Eviews 9.0

\*\*\*, \*\*, \* denotes statistical significance at 1%, 5%, and 10%, respectively.

LED is found to have a positive and significant short run relationship with GDP. This means that a 1% increase in LED leads to 6% increase in economic growth in Nigeria. The coefficient of LED lag one and lag two show a positive and significant relationship with LGDP; that is a 1% increase in LED leads to an increase in economic growth by 11%. Furthermore, a positive and significant relationship exists between investments (LINV) and LGDP. The result indicates that a 1% increase in investment (LINV) leads to 0.11% increase in LGDP. Similarly, a negative and significant short run relationship was found between LFDI and LGDP. This means that a 1% increase in LFDI leads to 3% decrease in LGDP. Furthermore, the coefficient of ECM bears a negative sign and it is statistically significant at 1% level. This indicates that ECM which measures the speed of adjustment at which LGDP adjusts to change in LNPG,

LED, LINV and LFDI before restoring to its equilibrium is about 39%. This shows that 39% of deviations from the long run equilibrium would be corrected within a period one year.

***Results of Diagnostic Test***

In order to check for the reliability of the estimated model, diagnostic tests were conducted. Thus, Breusch-Godfrey serial correlation LM test, Breusch-Pegan hetroskedasticity test, Jarque-Bera normality test and Ramsey RESET (functional form) tests were carried out.

**Table 5: Results of Diagnostic Tests**

<b>LM Test Statistic</b>	<b>Results</b>
<b>Serial Correlation: <math>\chi^2</math></b>	<b>0.813 [0.458]</b>
<b>Functional Form (Ramsey Test): F-Stat.</b>	<b>0.807 [0.379]</b>
<b>Normality (Jarque-Bera)</b>	<b>19.38210[0.000]</b>
<b>Heteroscedasticity: <math>\chi^2</math></b>	<b>1.288 [0.285]</b>

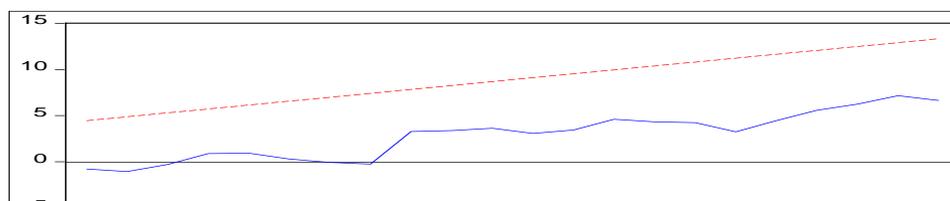
**Source:** Researchers’ computation using Eviews 9.0 .P-values are in parenthesis

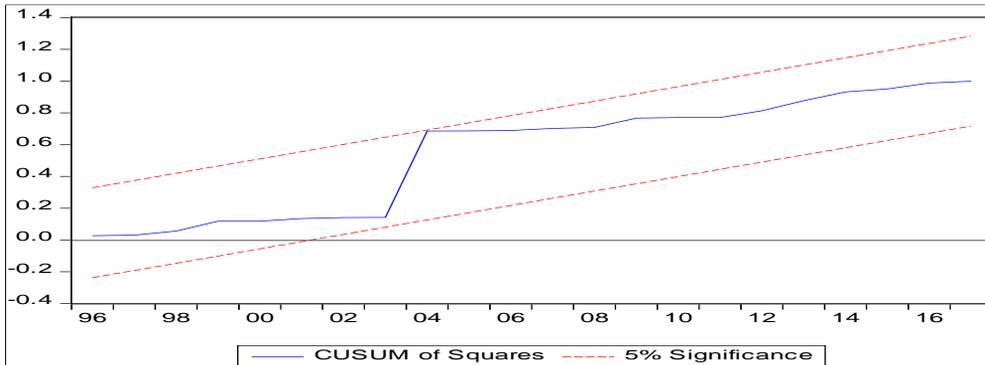
The result of diagnostic tests is reported in Table 5. The result of the serial correlation test using Breusch-Godfrey LM test indicates that the series is statistically insignificant, signifying that the error terms are not serially correlated. This implies that error terms are independent implying that the error term in one period does not depend on the error term in another period; therefore, we accept the null hypothesis of no serial correlation.

Normality (Jarque-Bera) test is shown to be statistically significant at 1% probability value, showing that the series are not normally distributed. This means a rejection of the null hypothesis of normally distributed series and accepting the alternative that the series are not normally distributed. However, according to Arshed cited in Umar (2018), if the sample is higher than 30, then one can ignore the normality issue as per central limit theorem. The results of the Breusch-Pagan-Godfrey heteroscedasticity test illustrate a high p-value. This suggests an acceptance of the null hypothesis and conclusion that the residuals have a constant variance (Homoscedasticity). The result of Ramsey test suggests that the estimated parameters of the models are stable.

***Results of Stability Tests***

In order to ascertain the stability of the parameters of the model, the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ) tests were conducted. If the plots of CUSUMQ break in the lower/upper bounds, the parameters are said to be unstable.





**Figure 1:** Cumulative sum of recursive residuals plots

The plots in Figure 1 falls within the boundaries, as the (CUSUM) and (CUSUMQ) plots do not fall in any of the 5% critical lines. This shows that the estimated parameters used in this study are stable for the period under study; confirming the stability of the model.

## **CONCLUSION AND POLICY RECOMMENDATIONS**

The ARDL Bound test of co-integration indicates a long run co-integrating relationship between economic growth, net migration and other control variables, namely educational expenditure, investment and Foreign Direct Investment. Moreover, a negative and significant long run relationship between net migration and economic growth is established, which reinforced the fact that the exodus of well trained professional and skilled labour force from Nigeria to other parts of the world in search of a greener pasture would negatively affect the productivity of the economy in the long run. However, in the short run, the effect of net migration on economic growth is found to be positive and statistically significant, buttressing a short run gain of net migration on the Nigeria economic growth. This may not be unconnected with the fact that proceeds from diaspora in form of remittances is no doubt being translated to economic growth through the process of multiplier effect.

Therefore, the study recommends that the push factors such as poor wage and incentive structure in Nigeria should be addressed through the provision of sound and effective

remuneration systems for employees across professions. This is in addition to promoting a system that rewards achievement and hard work, as well as ensuring transparent recruitment process. Moreover, government at all levels should ensure that they make life better through providing good quality of life (pull factors) for its citizens, equivalent to what is obtainable in those countries attracting Nigerians, in order to discourage more migration of people. This can be achieved through infrastructural development and observing high ethical standards and inculcating high moral values in the minds of Nigerians. Lastly, Nigerian government should provide an enabling environment and economic opportunities that will encourage Nigerians abroad to return home and invest, so as to develop the domestic economy.

## **REFERENCES**

- Abiola, A. (2019). Labour Migration, Remittances and Economic growth in Nigeria: An Indirect Least Square Approach. *International Journal of Research and Scientific Innovation*, 6(8), 2321-2705.
- Abu, N. (2017). Inflation and Unemployment Trade-off: A Re- examining of the Philips Curve and its Stability in Nigeria. *Contemporary Economics*, 14(1), 1-20.
- Abubakar, A., & Kassim, S. (2016). Sectoral Impact of Bank Credit in Malaysia: ARDL Modelling Approach. *Journal of Social Science and Humanities*, 24(5), 205-211.
- Afaha, J. S. (2013). Migration, Remittances and Development in Origin Countries: Evidence from Nigeria. *African Population Studies*, 27(1), 53-69.
- Akanbi , O. A. (2017). Impact of Migration on Economic Growth and Development: Case of Sub Saharan African Countries. *International Journal of Social Economics*, 44(5), 683-695.
- Arango, J. (2000). Explaining Migration: A Critical View. *International Social Science Journal*, 52 (165), 283-296.
- Bauer, T., & Klaus, F. Z. (1999). Assessment of Possible Migration Pressure and its Labour Market Impact Following EU Enlargement to Central and Eastern Europe. A Study for the Department of Education and Employment, UK. Iza Research Report No.3, July.
- Darkwah, S.A. (2014). Determinants of International Migration: The Nigeria experience. *Acta Universitatis Agricultural*, 62(2), 321-327.
- Drinkwater, S. L., Lotti, P. E., & Pearlman, J. (2003). The Economic Impact of Migration: A Survey, Flowela Working Paper 8. *Hamburg Institute of International Economics. Germany*, 1-52.
- Engle, R. F., & Granger, C. J. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55, 251-276.

- Fadahunsi, A. & Rosa, P. (2002). Insights from the Nigerian Cross-Border Trade. *Journal of Business Venturing*, 17(5), 397-429.
- Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59(6), 1551-1580.
- Kotani, S., & Kotani, K. (2012). The Effect of Net-Migration on Population-Growth Relationship in Indonesia. *Asian Journal of Empirical Research*, 2(2), 62-72.
- Massey, D. S., Arango, J., Hugo, G., Kouaci, A., Pellegrino, A., & Taylor, J. E. (1993). Theories of international migration: A Review and Appraisal, *Population and Development Review*, 19 (3), 431-466.
- Obameghie, M. A., Abubakar, I., & Abdurrahman, Y. I. (2018). The Impact of Net Migration on Total Fertility Rate in Sub-Saharan African Countries: Empirical Evidence from Nigeria. *European Scientific Journal*, 14(11), 34-46.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16, 289-326.
- Ramirez, A. M., Gonzalez, S. O., Markel, M. M., & Agoh, A. (2018). The Contribution of Migration to Economic Growth: Evidence from Spain. *Article on Business and Management*, 124-130.
- Sanderson, M. R., & Kentor, J. D. (2009). *Globalization, Development and International Migration: A Cross National Analysis of Less- Developed Countries*. Oxford University Press, 88(1), 301-336.
- Umar, B. Faruk (2018). The Impact of Internal Trade on Economic Growth in Nigeria: Autoregressive Distributed Lag (ARDL) Bound Testing Approach *UMYUK Journal of Economics and Development*, 1(3), 308-323.
- Umar, B. Faruk, & Abdullahi, A. (2019). Net Population Growth and Economic Growth in Nigeria: An Autoregressive Distributed Lag (ARDL) Model Approach. *East African Scholars Journal of Economics, Business and Management*. 2 (9), 502-512
- United Nations Conference on Trade and Development, Statistical Data.*
- World Bank (2018). World Development Indicators. Washington Dc, World Bank, USA.